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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: PROCTOR et al.

Atty. Dkt.: 27-001-PCT

Int. Application No.: PCT/US 03/16208

Filed: June 11, 2003

Title: WIRELESS LOCAL AREA
NETWORK REPEATER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: September 16, 2004

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office, Mail Stop PCT, Fax No. 571-273-3082 on September 16, 2004 to the attention of Examiner Phirin Sam.

Typed Name: DAVID G. POSZ

Signature: 

ARTICLE 34 AMENDMENT AND RESPONSE TO WRITTEN OPINION

Sir:

In response to the Written Opinion received via fax from the Examiner on September 13, 2004, which was received in response to Applicants' REQUEST FOR WRITTEN OPINION filed on August 18, 2004, please consider the following amendments and the appended remarks.

REMARKS

This response is being faxed directly to the Examiner pursuant to the Examiner's telephonic request of September 13, 2004. Entry of this response into the record and reconsideration of the present application is respectfully requested.

The Examiner has asserted the following: (1) claims 16-19, 22, 27, 28 and 33 lack novelty under PCT Article 33(2) as being anticipated by Atkinson; (2) claims 1-7 lack novelty under PCT Article 33(2) as being anticipated by Urabe; (3) claims 21 and 23-26 lack inventive step under PCT Article 33(3) as being obvious over Atkinson in view of Urabe; and (4) claims 29 and 30 lack inventive step under PCT Article 33(3) as being obvious over Atkinson in view of Sugar. The Examiner's assertions are traversed for the following reasons.

Regarding (1) above, Atkinson describes a wireless communications system with repeaters such as the repeater in FIG. 7. The Examiner asserts *inter alia* that Atkinson discloses at col. 8, lines 26-28 and in FIG. 7 a receiver for receiving a signal on either of at least first and second bi-directional frequencies simultaneously. However, the Examiner has misinterpreted this portion of Atkinson, which reads: "[r]epeters are configured so that transmitter 701 and receiver 702 operate simultaneously." Simultaneous operation of these two components has nothing to do with the ability of the receiver to receive a signal on either of at least first and second bi-directional frequencies simultaneously. Atkinson does not teach a repeater having a receiver with this type of capability.

Regarding claims 18 and 19, each repeater in Atkinson has a single transmitter 701 and a single receiver 702, where the transmitter 701 transmits on a single frequency that is different from the single reception frequency of the receiver 702. (See col. 8, lines 48-58.) Atkinson

does not teach a receiver for receiving a signal on either of first and second bi-directional communication frequencies simultaneously. In fact, the duplexer 707 in Atkinson, which is controlled by a microprocessor 703 to isolate receiver input signals from transmitter output signals (col. 8, lines 30-33), prevents the receiver from simultaneously receiving two bi-directional frequencies as in the present invention. Therefore, contrary to the Examiner's assertion, Atkinson does not teach the present invention as recited in claims 18 and 19.

The Examiner also asserts that Atkinson is applicable to independent claims 27, 28 and 33 for the same reasons as discussed above in connection with claims 18 and 19. However, claims 27, 28 and 33 are much different in scope than claim 18.

Specifically, claim 27 recites a wireless coverage extension device including *inter alia* an indicator for providing indication when received signal levels from at least one of first and second station devices are sufficient for communication between at least one of first and second wireless station devices and the wireless coverage extension device. Atkinson does not teach such an indicator.

Claim 28 recites a wireless coverage extension device including *inter alia* first and second bi-directional communication links operating on respective first and second frequency channels utilizing respective first and second antennas, with the second antenna having a polarization orthogonal to the first antenna. Similarly, claim 33 recites *inter alia* a wireless coverage extension device including *inter alia* first and second bi-directional communication links operating on respective first and second frequency channels utilizing respective first and second antennas.

As shown for example in FIG. 7, each of the repeaters in Atkinson includes only a single transmitter 701, a single receiver 702, and a single antenna 704. Atkinson does not teach first and second antennas as recited in claims 28 and 33.

The Examiner has failed to address the applicability of Atkinson to claims 27, 28 and 33, or alternatively has misinterpreted the scope of these claims. Regardless, Applicants assert that Atkinson does not teach the features recited in claims 27, 28 and 33.

Regarding claim 16, Atkinson does not teach a receiver for simultaneously receiving a signal on either of first and second bi-directional communication frequencies. (See discussion of claim 18 above.) As with claims 27, 28 and 33 discussed above, the Examiner's remarks are not germane to the elements recited in claims 16 and 17, as the remarks are directed specifically to the elements recited in claim 22, which is much different in scope than claim 16.

Claim 22 has been amended (see Replacement pages 24 and 25 attached) to further recite that the repeater is capable of receiving a signal on either of at least first and second bi-directional communication frequencies simultaneously. Such a feature distinguishes the claim over Atkinson generally for the same reasons discussed above in connection with claims 16 and 18.

Regarding (2) above, Urabe describes a TDD transceiver for transmitting and receiving signals having the same frequency. However, the transceiver is not an apparatus for facilitating wireless communication in a network between first and second communication devices as recited in claim 1, but rather is a communication device, or data endpoint, itself. The transmitter and receiver operate based on a TDD format, albeit on the same single bi-directional frequency rather than on the two bi-directional frequencies present in the present invention. Further, Urabe does

not teach that the transceiver has a receiver that is for receiving a signal on either of first and second bi-directional communication frequencies simultaneously, as there is only a single receiver, such as the receiving section 4 in FIG. 3 including a single decoder 45, mixer 42 and detector 43. The detector is not capable of determining if a signal is present on one of the at least two bi-directional frequencies. Further, the frequency converter 3 in FIG. 1 of Urabe does not convert a signal present on one of the bi-directional frequencies to a converted signal on the other of the bi-directional frequencies, but rather converts a first oscillator frequency of the local oscillator 2 to another modulation frequency and only in a uni-directional manner, or in other words, from a lower oscillator frequency to an RF frequency, and not vice versa. Put another way, the frequencies discussed at, for example, col. 4, lines 49-58 of Urabe are not bi-directional, as they are generated by and output from the oscillator during both transmit and receive operations, but are not capable of returning to the oscillator. Therefore, the Examiner's assertion that claims 1-7 lack novelty in view of Urabe is incorrect.

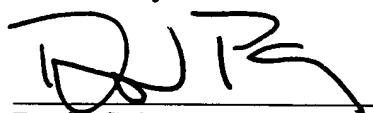
Regarding (3) above, the combination of Atkinson and Urabe does not teach or suggest the features of the present invention recited in claims 21 and 23-26 at least based on the fact that neither reference teaches a receiver that is for receiving a signal on either of first and second bi-directional communication frequencies simultaneously as already discussed.

It should also be noted that in (1) above the Examiner indicated that claim 27, which recites *inter alia* a signal indicator, lacked novelty in view of Atkinson, but that in (3) above the Examiner asserted that Atkinson did not teach such a feature. Clarification is requested.

Regarding (4) above, the combination of Atkinson and Sugar does not render the present invention as recited in claims 29 and 30 obvious at least for the reasons discussed above in connection with claim 28, from which both claims 29 and 30 ultimately depend.

Although it is not anticipated that any additional fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. 50-1147.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'DGP', is written over a horizontal line.

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communication frequency and for transmitting the signal information packet using said transmitter on said second bi-directional communication frequency.

20. The repeater of Claim 19, wherein said receiver includes a signal detector operatively coupled to the circulator that determines if the signal is present on one of said at least first and second bi-directional communication frequencies, and a frequency converter operatively coupled to the receiver for converting the signal present on one of said at least first and second bi-directional communication frequencies to the other of said at least first and second bi-directional communication frequencies.

21. The repeater of Claim 19, wherein said detector includes a power indicator that detects the signal received at said receiver on one of said at least first and second bi-directional communication frequencies.

22. A network operating on at least first and second bi-directional communication frequencies, comprising:

a base unit for transmitting and receiving data on said first and second bi-directional communication frequencies using a time division duplex protocol on either of said at least first or second bi-directional communication frequencies,

a client unit capable of transmitting and receiving data on said first and said second bi-directional communication frequencies using the time division duplex protocol on either of said at least first or second bi-directional communication frequencies, and

a repeater capable of communicating between said base unit and said client unit using the time division duplex protocol on one of said at least first or second bi-directional communication frequencies different from that used by said client unit, and of receiving a signal on either of said at least first and second bi-directional communication frequencies simultaneously.

23. The network of Claim 22, wherein said repeater includes:

a receiver for receiving signals on said at least first and second bi-directional communication frequencies simultaneously;

a signal detector operatively coupled to the receiver for determining if a signal is present on at least one of said at least first and second bi-directional communication frequencies;

a frequency converter for converting a signal present on the first bi-directional frequency to a converted signal on the second bi-directional communication frequency, and

a transmitter that transmits the converted signal on the second bi-directional communication frequency.